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REMARKS

The claims presented are the same as those previously presented with the exception that Claim 5 is now canceled to eliminate redundancy. Claims 1-4, 6-20 and 25-45 are now pending.

Status of Claims 31-45

The subject Office Action did not indicate the status of these claims. Applicant respectfully submits that they are allowable for at least the reasons given below.

Discussion of the 35 U.S.C. § 102(e) Rejection

Claims 1-4, 6-20 and 25-29 have been rejected under 35 U.S.C. § 102(e) as being anticipated by Amin et al., U.S. Patent Application Publication No. 2002/0121636 A1.

Applicant recites "wherein each computational element is magnetically coupled to at least one adjacent computational element" in part in Claim 1. In Amin as well as in Applicant's specification, coupling means entanglement of qubits resulting in a coherent quantum system allowing quantum-mechanical interaction between individual qubits (see Applicant's specification, paragraph [0004] on page 1 and Amin paragraph [0008]). However, although Amin also relates to quantum computing, Amin doesn't disclose magnetic coupling between adjacent computational elements. On the contrary, Amin uses <u>current coupling</u> between adjacent computational elements to change the quantum state of a computational element.

The Examiner stated that Amin discloses the coupling of magnetic fields. However, these magnetic fields are external, i.e., they are generated by additional hardware, not by the memory or computing element itself. This fact is acknowledged by Amin in section [0012] as he states that "in order to overcome these sources of decoherence, a large amount of overhead is required …." Amin solves this overhead problem in case of magnetic coupling by using current and voltages. To his opinion it is easier to control currents and voltages than to use (external) magnetic fields. Because Amin only teaches using external magnetic fields, he fails to disclose <u>magnetic coupling between adjacent computational elements</u>.

Applicant is the first to disclose using the magnetic field generated by the computational element itself to change the state of an adjacent computational cell. Compared to Amin, Claim 1

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solves the "overhead problem" of the prior art by using the magnetic fields of the device itself. It does not need additional hardware to provide magnetic fields, nor any current or voltage controlling means.

Claim 26 is similar to Claim 1, and the arguments above, plus its additional features apply.

Thus, Applicant respectfully submits that the rejection of Claims 1 and 26 has been overcome and that an indication of allowability should be made in the next Action.

Allowable Claims

Claim 25 has been rejected under 35 U.S.C. § 102(e) as being anticipated by Amin et al., U.S. Patent Application Publication No. 2002/0121636 A1, in the 2nd Office Action dated July 29, 2005. Applicant wishes to remind the Examiner of the fact that in the 1st Office Action, dated February 16, 2005, paragraph 23 states that Claim 5 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicant rewrote Claim 5 as previously filed as a new independent Claim 25 in the response to the 1st Office Action. Therefore, Applicant respectfully submits that Claim 25 be allowed as the Examiner has previously allowed the same subject matter written in a different form.

Dependent Claims

Claims 2-20 are dependent either directly or indirectly on the above-discussed independent Claim 1. Claim 30 is similar to the above-discussed independent Claim 25 because it only differs from Claim 25 in that the adjective "quantum" was added to the noun "computational element". Claims 27-29 and 31-45 are also dependent on allowable claims. Applicant respectfully submits that pursuant to 35 U.S.C. § 112, ¶4, the dependent claims incorporate by reference all the limitations of the claim to which they refer and include their own patentable features, and are therefore in condition for allowance. Therefore, Applicant respectfully requests the withdrawal of all claim rejections or objections and prompt allowance of the claims.

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Conclusion

     In light of the above, reconsideration and withdrawal of the outstanding rejections are specifically requested. In view of the foregoing remarks, Applicant respectfully submits that the claims of the above-identified application are in condition for allowance. However, if the Examiner finds any impediment to allowing all claims that can be resolved by telephone, the Examiner is respectfully requested to call the undersigned.

     Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: ___9/28/05___

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